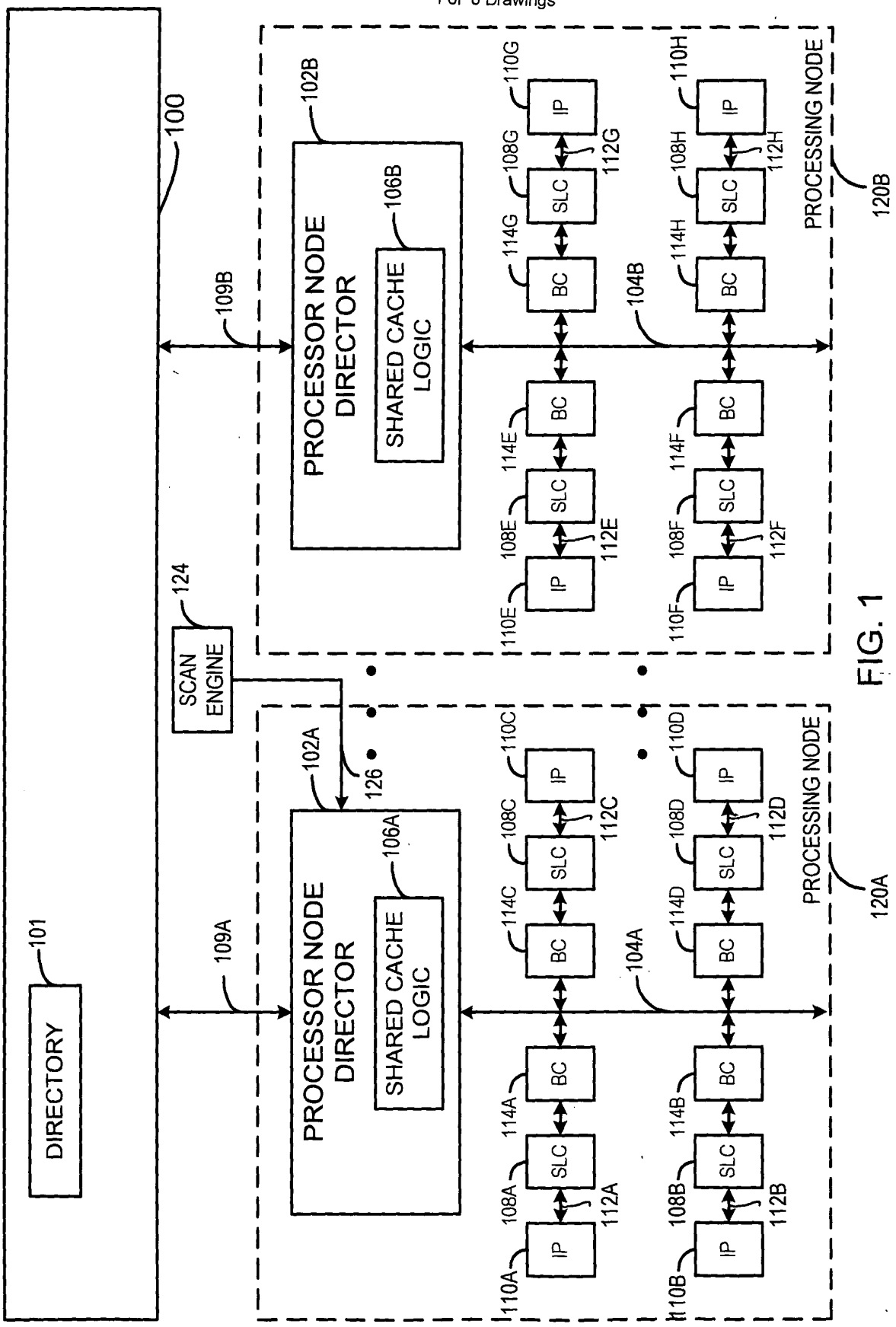
100
DIRECTORY
101
SCAN ENGINE
124
126
PROCESSOR NODE DIRECTOR
SHARED CACHE LOGIC
102A
106A
102B
106B
109A
109B
104A
104B
PROCESSING NODE
120A
120B
IP
SLC
BC
110A
110B
110C
110D
110E
110F
110G
110H
108A
108B
108C
108D
108E
108F
108G
108H
112A
112B
112C
112D
112E
112F
112G
112H
114A
114B
114C
114D
114E
114F
114G
114H

FIG. 1

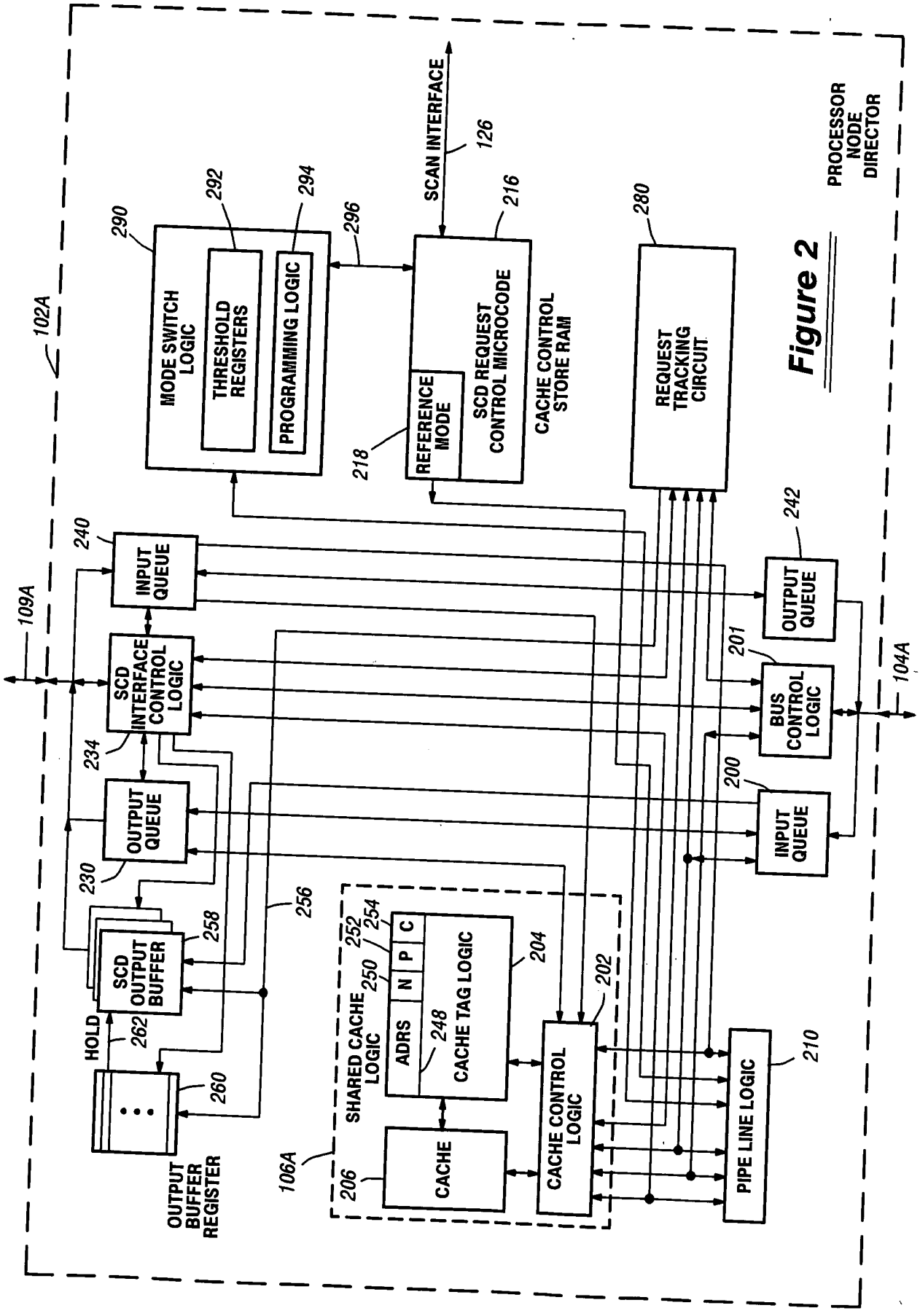
PROCESSOR NODE DIRECTOR
102A
SCAN INTERFACE
126
290
292
294
296
MODE SWITCH LOGIC
THRESHOLD REGISTERS
PROGRAMMING LOGIC
216
SCD REQUEST CONTROL MICROCODE
CACHE CONTROL STORE RAM
218
REFERENCE MODE
280
REQUEST TRACKING CIRCUIT
240
INPUT QUEUE
242
OUTPUT QUEUE
109A
SCD INTERFACE CONTROL LOGIC
201
BUS CONTROL LOGIC
104A
234
OUTPUT QUEUE
200
INPUT QUEUE
230
256
258
SCD OUTPUT BUFFER
HOLD
262
260
OUTPUT BUFFER REGISTER
SHARED CACHE LOGIC
252
254
C
P
N
ADRS
250
248
CACHE TAG LOGIC
204
202
106A
206
CACHE
CACHE CONTROL LOGIC
210
PIPE LINE LOGIC

Figure 2

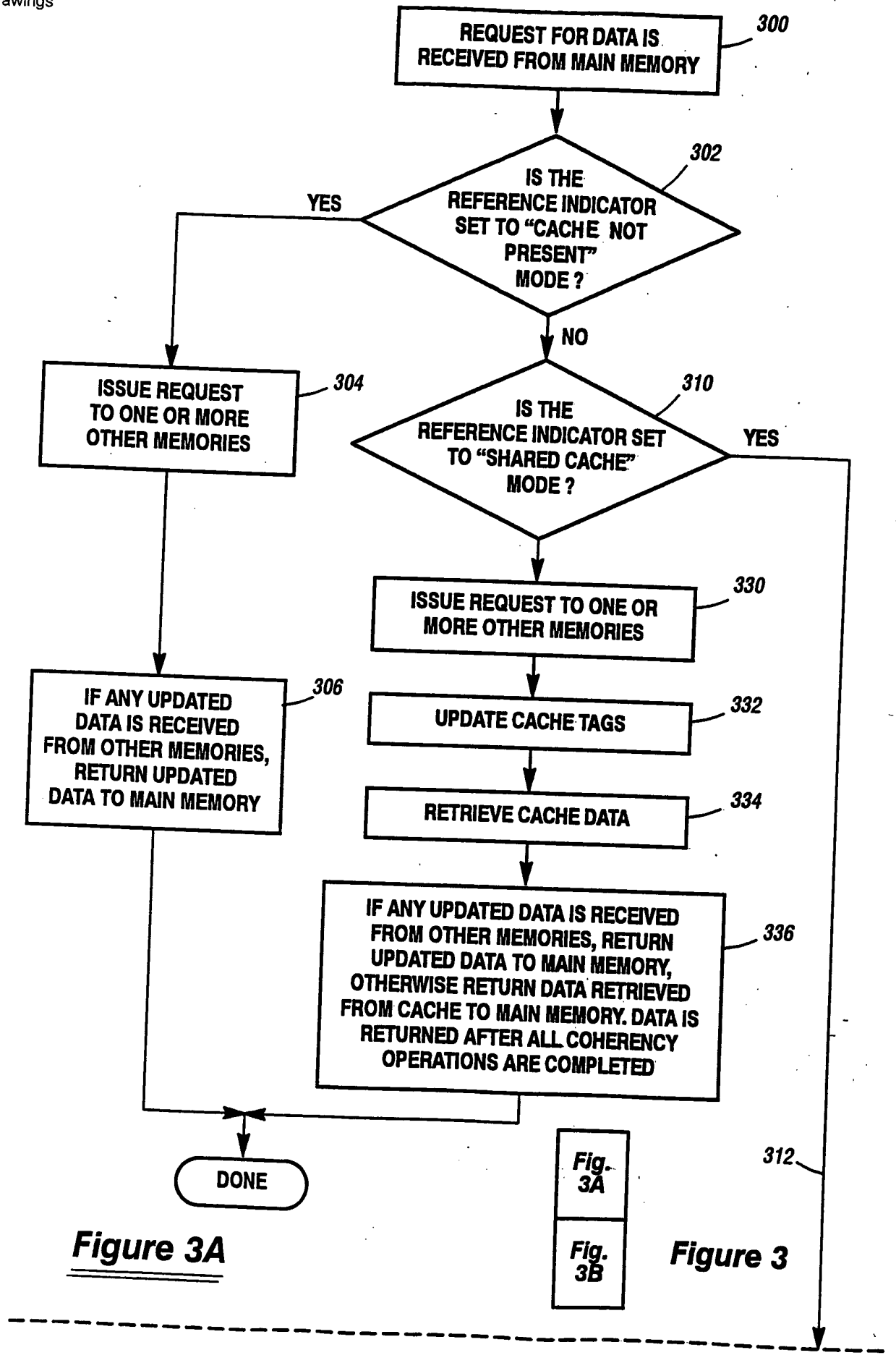

Figure 3A

Figure 3

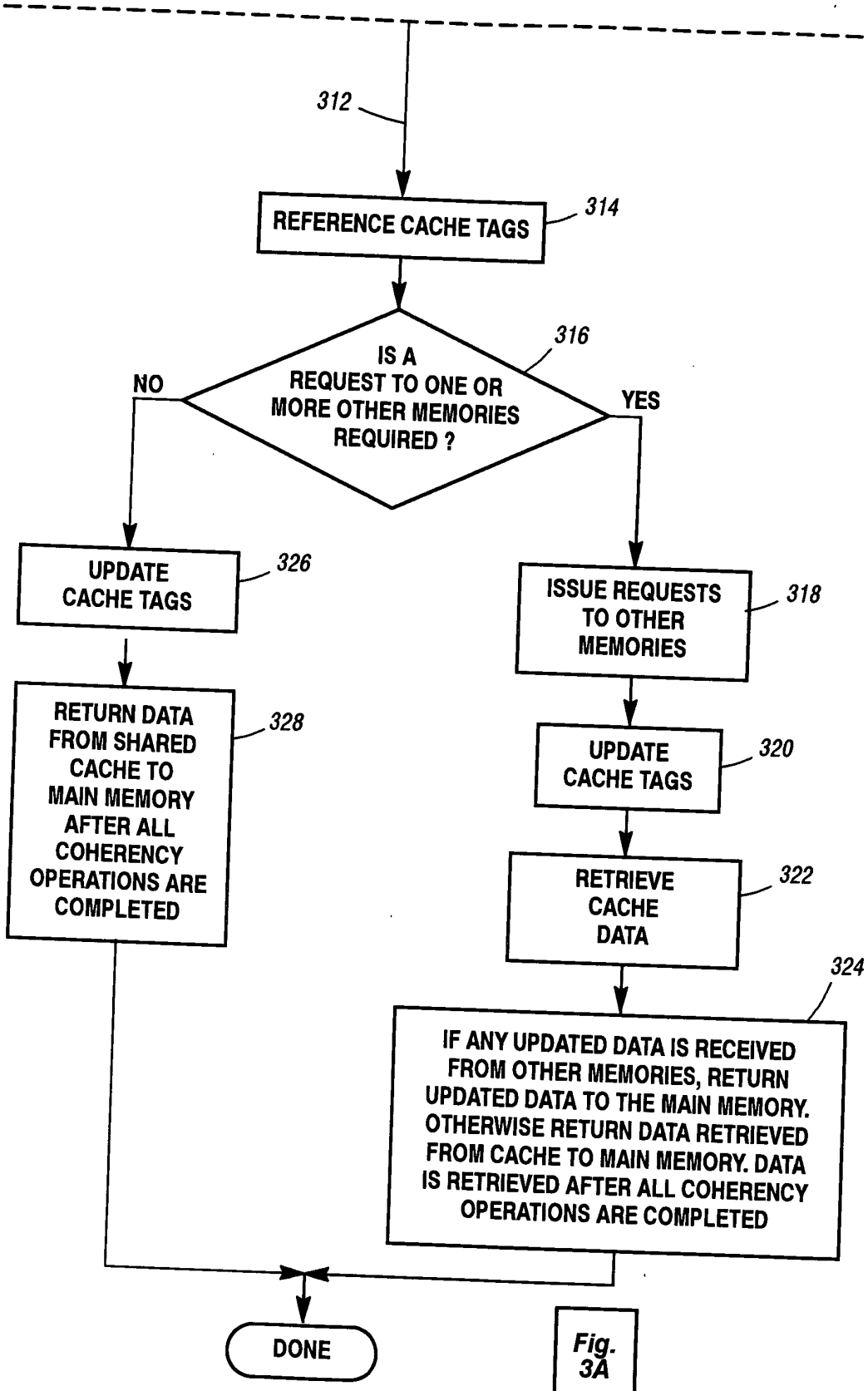

Figure 3B

Figure 3

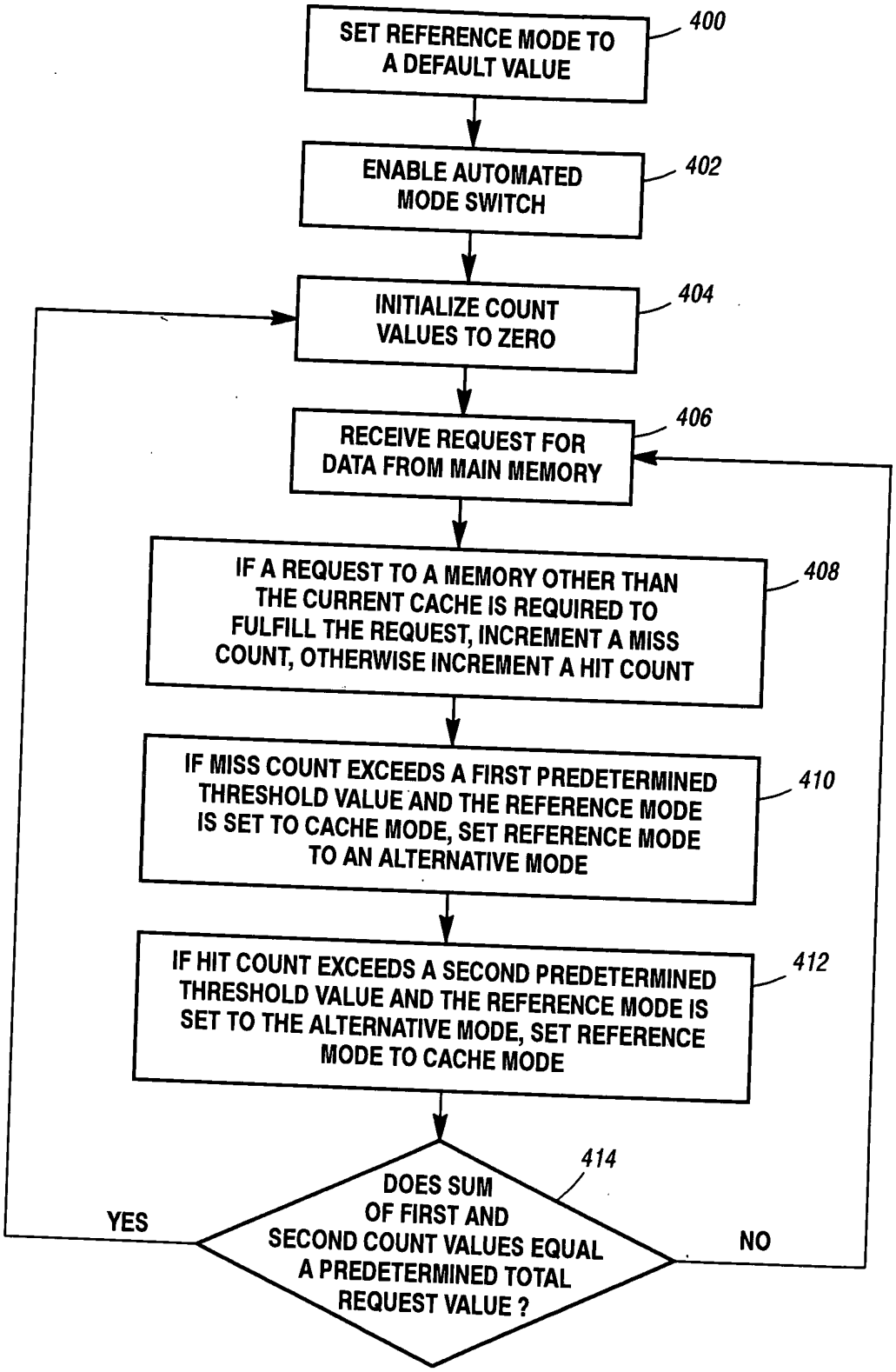
SET REFERENCE MODE TO A DEFAULT VALUE
400
ENABLE AUTOMATED MODE SWITCH
402
INITIALIZE COUNT VALUES TO ZERO
404
RECEIVE REQUEST FOR DATA FROM MAIN MEMORY
406
IF A REQUEST TO A MEMORY OTHER THAN THE CURRENT CACHE IS REQUIRED TO FULFILL THE REQUEST, INCREMENT A MISS COUNT, OTHERWISE INCREMENT A HIT COUNT
408
IF MISS COUNT EXCEEDS A FIRST PREDETERMINED THRESHOLD VALUE AND THE REFERENCE MODE IS SET TO CACHE MODE, SET REFERENCE MODE TO AN ALTERNATIVE MODE
410
IF HIT COUNT EXCEEDS A SECOND PREDETERMINED THRESHOLD VALUE AND THE REFERENCE MODE IS SET TO THE ALTERNATIVE MODE, SET REFERENCE MODE TO CACHE MODE
412
DOES SUM OF FIRST AND SECOND COUNT VALUES EQUAL A PREDETERMINED TOTAL REQUEST VALUE ?
414
YES
NO

Figure 4

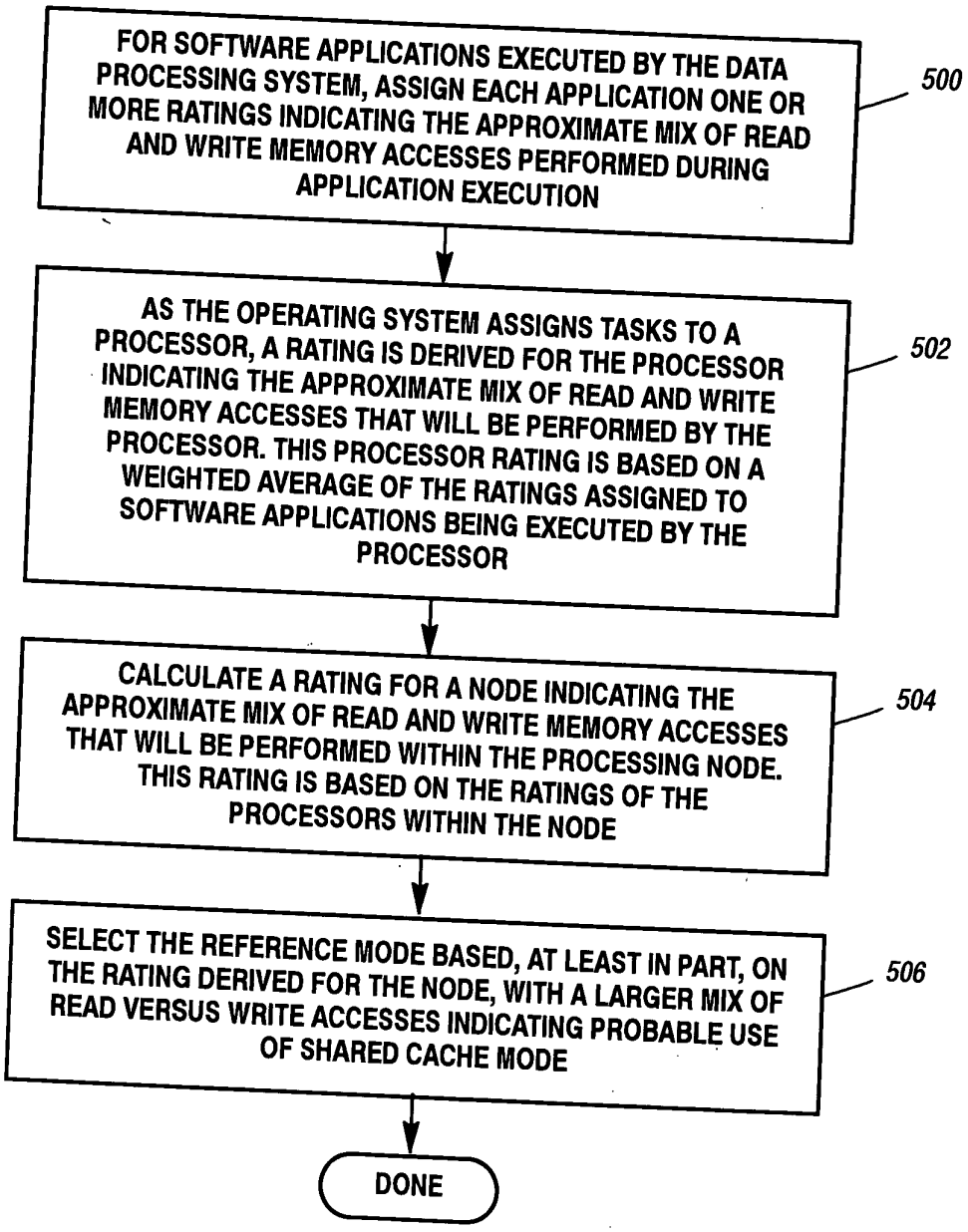
FOR SOFTWARE APPLICATIONS EXECUTED BY THE DATA PROCESSING SYSTEM, ASSIGN EACH APPLICATION ONE OR MORE RATINGS INDICATING THE APPROXIMATE MIX OF READ AND WRITE MEMORY ACCESSES PERFORMED DURING APPLICATION EXECUTION
500
AS THE OPERATING SYSTEM ASSIGNS TASKS TO A PROCESSOR, A RATING IS DERIVED FOR THE PROCESSOR INDICATING THE APPROXIMATE MIX OF READ AND WRITE MEMORY ACCESSES THAT WILL BE PERFORMED BY THE PROCESSOR. THIS PROCESSOR RATING IS BASED ON A WEIGHTED AVERAGE OF THE RATINGS ASSIGNED TO SOFTWARE APPLICATIONS BEING EXECUTED BY THE PROCESSOR
502
CALCULATE A RATING FOR A NODE INDICATING THE APPROXIMATE MIX OF READ AND WRITE MEMORY ACCESSES THAT WILL BE PERFORMED WITHIN THE PROCESSING NODE. THIS RATING IS BASED ON THE RATINGS OF THE PROCESSORS WITHIN THE NODE
504
SELECT THE REFERENCE MODE BASED, AT LEAST IN PART, ON THE RATING DERIVED FOR THE NODE, WITH A LARGER MIX OF READ VERSUS WRITE ACCESSES INDICATING PROBABLE USE OF SHARED CACHE MODE
506
DONE

Figure 5